Acceptance and Refusal of Covid-19 Vaccine Among Senior High School Students of Mindanao State University-Buug Campus

Annie Rose T. Apao, Decleah B. Beniga, Elver Bucol, Elvin T. Sinining, Arjane Rose C. Alferez, and Tashmera D. Laranjo

Nursing Department, College of Arts and Sciences, Mindanao State University – Buug Campus, Buug, Zambonga Sibugay, Philippines
Email: tashmera.laranjo@msubuug.edu.ph

ABSTRACT

The Coronavirus disease 19 also known as COVID-19 pandemic has been a health issue of great concern since 2019 which has resulted in more than 240,940,937 cases and more than 4,903,911 deaths worldwide. Much hope for life after the COVID-19 pandemic lies in the potential success of vaccine. Population aging above 18 years old continue receiving their Covid-19 vaccines and young teenagers are being prepared for the next vaccination. This study used a quantitative-descriptive method of research involving 200 senior high school students of the Mindanao State University – Buug Campus as respondents to determine their acceptance of the Covid-19 vaccine. Data gathering was done through online survey using an adopted questionnaire authored by Cerda and Garcia (2021). The results demonstrated that the respondents accepted the COVID-19 vaccine with a general weighted mean of 3.09 and interpreted as agree. Even though most of the respondents were female, the data being gathered showed that males were more likely agreed to accept the COVID-19 vaccine with 95.2% while the female only had 94.2%. Moreover, among the available vaccines in the Philippines, it was revealed in this study that Pfizer was highly preferred vaccine by the respondents with a percentage of 83%. With 200 high school student respondents, this study showed that students are willing to receive vaccination against COVID19 and that the students have good knowledge and awareness about the COVID19 vaccine. Although an effective and safe vaccine against COVID 19 is a key element in controlling and bringing an end to the COVID 19 pandemic, ensuring wide acceptability of the vaccine is essential. Several barriers were identified, and efforts should be intensified to overcome factors that hamper vaccination.

Keywords : COVID-19 vaccine, acceptance, refusal

1. INTRODUCTION

The Coronavirus disease 2019 also known as COVID-19 pandemic has been a health issue of great concern since 2020. According to World Health Organization (WHO), as of October 2021, the COVID-19 pandemic has resulted in more than 240,940,937 cases and more than 4,903,911 deaths worldwide (WHO, 2021). The pandemic has resulted in a devastating impact worldwide, which prompted the need or mitigation policies to contain the pandemic. Nations around the world have put into practice different control measures, such as social distancing, partial and comprehensive lockdowns, closing schools and businesses, and/or wearing face masks in public. Although such measures have helped in flattening the epidemic curve, the resurgence of COVID-19 has been reported as societies and economies reopened (Shimizu et. al., 2020). For this reason, there is an urgent need for long-term preventive measures.

By managing and preventing infectious illnesses like smallpox, polio, and plague, vaccines have been a crucial method for improving health outcomes and life expectancy (Harrison & Wu, 2020). Given the very high morbidity and mortality associated with COVID-19, the improvement of a safe and effective COVID-19 vaccine is a vital step to halt the pandemic. According to the World Health Organization, there were 61 COVID-19 vaccine candidates awaiting clinical study as of

December 23, 2020, and 172 candidate vaccines in preclinical evaluation as of December 23, 2020. Despite this, misinformation and conspiracy theories about COVID-19 vaccinations can have a significant impact on vaccine uptake once they are accessible.

As a result, vaccine hesitancy, which is defined as a "delay in accepting or refusing immunization despite the availability of vaccination services" (McDonald, 2015), may stymie future COVID-19 vaccination efforts.

Speculations that influence perceived barriers, advantages, self-efficacy, and dangers to create greater vaccine acceptance, according to Jones et al (2021), will induce optimal behavioral changes. Different countries should consider this while implementing a vaccine campaign to combat COVID-19 because, as (Henderson et al., 2021) have shown, trust in public health measures and governments influences the desire to embrace preventative measures. Furthermore, special emphasis must be given not only to the anti-vaccine movement and social media perceptions of a vaccine conspiracy, but also to probable institutional or government skepticism of immunizations. As researchers have pointed out, when governments try to contain a pandemic, a population's hesitancy can quickly turn into a rejection. As a result, the effectiveness of the linked public policy, which should be based on information, trust, and

legitimacy, may be limited. Given their importance in creating public concerns and influence, the roles of social media and physicians in this process may become critical.

Vaccine trust and uptake have been dropping in many regions of the world, including the Philippines, even before COVID-19. The issue surrounding Dengvaxia, Sanofi's dengue vaccine, that erupted in the Philippines in 2017 has undoubtedly harmed public trust in vaccines, and is likely to have considerable influence on the country's COVID-19 immunization prospects (Mendoza et al., 2021).

There are a variety of causes for this, including widespread disinformation propagated by word-of-mouth and online conspiracy theories about vaccines. Many Filipinos also claim that they do not wish to acquire vaccines in the country so that everyone can be adequately immunized, or that they are waiting for better options to emerge (Westerman, 2021).

The probable success of the COVID-19 vaccine provides a lot of optimism for life after the pandemic. The success of a vaccination, on the other hand, is contingent on widespread adoption. Young teenagers are being prepared for the next vaccination due to the increased occurrence of COVID19 illnesses and the potential of limited face-to-face classes. Little is known about the acceptance of a potential COVID-19 vaccine and the factors that influence its acceptance at the time this study is being conducted, despite the fact that such information is critical in developing strategies to increase vaccine acceptability before a vaccine is made available to senior high school students. As such, the researchers have thought of conducting this study as to the possible acceptance or refusal among young teenager, particularly, Senior High School students of Mindanao State University – Buug Campus. In as much as vaccination is not a coercion, students' decision – either to refuse or accept it is an exercised right. Yet, the results of the study be it negative or positive were documenting the views of senior high school students as to embracing or shunning away from the government's vaccination program.

2. METHODOLOGY

2.1. RESEARCH DESIGN

This study utilized the descriptive-quantitative method of research to identify determinants of acceptance and refusal of Covid-19 vaccines and explore the relationship between the demographic profile of the respondents and refusal or acceptance of the Covid-19 vaccines among senior high school students of the MSU-Buug.

2.2 LOCALE OF THE STUDY

This study was conducted at Mindanao State University Buug Campus located in Datu Panas, Buug, Zamboanga Sibugay, Zamboanga Peninsula Region, Philippines. Majority of the students studying in this university are coming from the 16 municipalities of the province of Zamboanga Sibugay and nearby provinces like Zamboanga del Sur and Zamboanga del Norte. The University comprises of eight colleges, junior high school and senior high school departments. As of the present school year, the senior high school department has students 263 enrolled in the first semester. Senior high school in MSU Buug is offering academic strands namely Science and Technology, Engineering, Agriculture, Mathematics (STEAM), Accountancy and Business Management (ABM), and Humanities and Social Sciences (HUMSS).

Fig. 1. Map of Mindanao State University – Buug Campus

2.3. RESEARCH INSTRUMENT

In this study, the researchers utilized an adapted questionnaire from the study entitled "The hesitation and refusal factors in individuals' decision-making process regarding a coronavirus disease 2019 vaccination" authored by Arcadio Cerda and Leidy Garcia which was published on Frontiers. Despite the fact that the researchers are unable to contact the authors, their research is an open-access article distributed under the Creative Commons Attribution License, which allows for use, distribution, and reproduction in other forms, provided that credit is given to the original authors and copyright owners for the study's success. Meanwhile, the scale reliability based on the Cronbach alpha coefficient of the utilized questionnaire was 0.757, which was considered appropriate.

The first component of the questionnaire focuses on the respondents' demographic information. Gender, preferred vaccine, number of vaccinated family members, and number of health workers (relatives or immediate family members) were all included in the respondents' profile. The benefit, effectiveness, and other reasons for adoption of the COVID-19 vaccination are described in the second portion of the questionnaire. The vaccine's susceptibility, severity, barrier, cue to action, and other reasons why people refuse the vaccine are all included in the third section. The researchers use these characteristics to quickly determine the factors that influenced Senior High School students' acceptance and refusal of the COVID-19 vaccine. The 4-point Liker Scale was be used by the respondents to answer the questions (strongly agree with a score of 1; agree with a score of 2; disagree with a score of 3; and strongly disagree with a score of 4). The responders simply selected a check mark (/) from the available alternatives for their responses.

The questionnaire was made using Google forms. The link was then distributed via students Facebook groups. A panel of experts confirmed the content validity of the questionnaire.

2.4. DATA GATHERING PROCEDURES

The researchers obtained permission (through a formal letter) to conduct the study from the Office of the Vice Chancellor for Academic Affairs (OVCAA) and from the principal of the senior high school department of the MSU-Buug. Then, the respondents were informed about their participation in the study through their adviser prior to data collection and assent was given. They were also informed that their responses would be kept private and would only be utilized for the purposes of this study. Following permission, the researchers collect data from the respondents through the research instrument administered online.

3. RESULTS AND DISCUSSION

The following tables show the determinants of acceptance and refusal of COVID-19 vaccine among Senior High School students of Mindanao State Univeristy – Buug Campus.

TABLE 1

			Disagree	Agree	Strongly Agree	Total
Gender	Male	Count	3	38	21	62
		% Within Gender	4.8%	61.3%	33.9%	100.0%
	Female	Count	8	81	49	138
		% Within Gender	5.8%	58.7%	35.5%	100.0%
Total		Count	11	119	70	200
		% Within Gender	5.5%	59.5%	35.0%	100.0%

The table shows the relationship between the gender and Covid-19 Vaccine acceptance. As reflected in the table, the test yielded to a Chi-square value of 0.153 with p value of .927 which implied not to reject the null hypothesis at 0.05 level of significance. Therefore, it can be concluded from the results that there was no significant relationship between the gender and Covid-19 Vaccine acceptance.

In Kuwait, however, male patients were more likely than female subjects to accept a COVID-19 vaccine, according to Alqudeimat et al (2021). Furthermore, the data acquired in this study demonstrated that males are more likely to accept the COVID-19 vaccine, with 95.2 percent agreeing, compared to 94.2 percent for females.

TABLE 2
Type of Vaccine and Covid-19 Vaccine Acceptance

			Disagree	Agree	Stronbly Agree	Total
Vaccine	Pfizer	Count	7	102	57	166
		% within Vaccine	4.2%	61.4%	34.3%	100.0%
	Johnson and Johnson	Count	0	2	2	4
		% within Vaccine	0.0%	50.0%	50.0%	100.0%
	Aztrazenica	Count	0	1	4	5
		% within Vaccine	0.0%	20.0%	80.0%	100.0%
	Moderna	Count	0	6	6	12
		% within Vaccine	0.0%	50.0%	50.0%	100.0%
	Sinovac	Count	2	5	1	8
		% within Vaccine	25.0%	62.5%	12.5%	100.0%
	Undecided	Count	2	3	0	5
		% within Vaccine	40.0%	60.0%	0.0%	100.0%
Total		Count	11	119	70	200
		% within Vaccine	5.5%	59.5%	35.0%	100.0%

The table shows the relationship between the type of vaccine and Covid-19 Vaccine acceptance. As reflected in the table, the test yielded to a Chi-square value of 26.524 with p value of .003 which implied to reject the null hypothesis at 0.05 level of significance. Therefore, it can be concluded from the results that there was a significant relationship between the type of vaccine and Covid-19 Vaccine acceptance.

Millions of Filipinos have already benefited from the Sinovac and AstraZeneca vaccinations, which were the first to arrive, according to Nalzaro (2021). However, due to "vaccine distrust," some people are still hesitant to be vaccinated with the two vaccines. However, when Pfizer-BioNTech was used just this week in key cities, an influx of people lined up to get the limited shots because it is more reliable and effective than Sinovac and AstraZeneca, they said. The Pfizer-BioNTech vaccine, or BNT 162b2, has been demonstrated to be 95 percent successful in a large-scale clinical trial, according to manufacturer statistics. The combined AstraZeneca analysis revealed an average effectiveness of 70% and proved 100% protection against severe illness. Sinovac, on the other hand, has an efficacy rate of 80-90 percent according to the most recent data. He went on to say that now is not the time to be picky. Take a vaccine if one is available. The best thing you can do is get the immunization when your turn comes around. Prepare yourself. Also, don't hold out for a specific vaccine. They're all effective. Vaccines are still in short supply, so if you are eligible and find availability, take advantage of it. Take it.

TABLE 3
Gender and Covid-19 Vaccine Refusal

			Strongly Agree	Agree	Disgree	Strongly Agree	Total
Gender	Male	Count	5	21	35	62	62
		% Within Gender	8.1%	33.9%	56.5%	1.6%	100.0%
	Female	Count	1	53	78	6	138
		% Within Gender	0.7%	38.4%	56.5%	4.3%	100.0%
Total		Count	6	74	113	7	200
		% Within Gender	3.0%	37.0%	56.5%	3.5%	100.0%

The table shows the relationship between the gender and Covid-19 Vaccine refusal. As reflected in the table, the test yielded to a Chi-square value of 8.834 with p value of .032 which implied to reject the null hypothesis at 0.05 level of significance. Therefore, it can be concluded from the results that there was a significant relationship between the gender and Covid-19 Vaccine refusal.

Females were shown to be less likely than males to accept COVID-19 vaccinations, according to this study. Women were much more likely than males to indicate a desire to delay or reject the COVID-19 vaccine, according to Bellon (2021), which is consistent with previous research on vaccine hesitancy. She went on to say that women were more likely than males to say the vaccine was too new, that they were concerned about side effects, and that they had a medical contraindication to it.

TABLE 4
Type of Vaccine and Covid-19 Vaccine Refusal

			Strongly Agree	Agree	Disagree	Strongly Agree	Total
Vaccine	Pfizer	Count	5	60	97	4	166
		% within Vaccine	3.0%	36.1%	58.4%	2.4%	100.0%
	Johnson and Johnson	Count	0	1	2	1	4
		% within Vaccine	0.0%	25.0%	50.0%	25.0%	100.0%
	Aztra-zenica	Count	0	0	4	1	5
		% within Vaccine	0.0%	0.0%	80.0%	20.0%	100.0%
	Moder-na	Count	0	7	5	0	12
		% within Vaccine		0.0%	50.0%	50.0%	100.0%
	Sinovac	Count		2	5	1	8
		% within Vaccine		25.0%	62.5%	12.5%	100.0%
	Unde-cided	Count		2	3	0	5
		% within Vaccine		40.0%	60.0%	0.0%	100.0%
Total		Count		11	119	70	200
		% within Vaccine		5.5%	59.5%	35.0%	100.0%

$\chi^2(15) = 25.335, p = .046$

The table shows the relationship between the type of vaccine and Covid-19 Vaccine refusal. As reflected in the table, the test yielded to a Chi-square value of 25.335 with p value of .046 which implied to reject the null hypothesis at 0.05 level of significance. Therefore, it can be concluded from the results that there was a significant relationship between the type of vaccine and Covid-19 Vaccine refusal.

Among those who had been immunized, the COVID-19 vaccine's efficacy rate was the foundation. Side effects of vaccines, on the other hand, were taken into account. Other times, the worry is due to the vaccine's potential negative effects, according to Rief (2021). Some peo-

ple may resist vaccinations, but they will wait until more people have been vaccinated to determine if there are any long-term side effects. In addition, Alqudeimat et. al. (2021) in Kuwait found that the majority of participants were concerned about potential side effects (83.7%), a lack of knowledge (82.3%), safety (71.8%), and questionable efficacy (71.8%). (69.9 percent).

TABLE 5
Number of Vaccinated Family Members and Covid-19 Vaccine Refusal

Variables	Pearson Correlation (r)	Remark	p-value	Interpretation
* Number of Vaccinated Family Members and Covid-19 Vaccine Refusal	-0.091	Negligible	.200	Not Significant

Correlation Size: ±00 - ±30= Negligible; ±31 - ±50= Low; ±51 - ±70= Moderate; ±71 - ±90= High; ±91 - ±1.0= Very High

The table shows the test of relationship between the number of vaccinated family members and covid-19 vaccine refusal. As reflected in the table, the test yielded to a Pearson Correlation (r) coefficient of -0.091 with p value of .200 which signified not to reject the null hypothesis and established no significant relationship between the variables at 0.05 level. Furthermore, the r value of -0.091 also signified negligible negative correlation between the said variables. This means that the increase of the number of vaccinated family members was related to the decrease of covid-19 vaccine refusal, and the decrease of the number of vaccinated family members was related to the increase of covid-19 vaccine refusal. Therefore, it can be concluded from the results that there was no significant relationship between the number of vaccinated family members and covid-19 vaccine refusal.

One of the main reasons for the refusal of the COVID-19 vaccination was a lack of knowledge. Because one of their ancestors was vaccinated, a person may refuse to be vaccinated because they believe it will make them sick or even kill them. There is a fallacy that the COVID 19 vaccination can make a vaccinated person unwell, according to the CDC (2021). However, despite the fact that the vaccination contains the live virus that causes COVID-19, it cannot make you sick. Furthermore, a 17-year-old female from Washington died of cardiac arrest 36 days after receiving her second Pfizer immunization, according to Ley (2021). She was the third individual died from a COVID-19 vaccine, according to the Vaccine Adverse Event Reporting System (VAERS). The Food and Drug Administration (FDA) and the Centers for Disease Control (CDC) manage the VAERS system, which collects data from all around the world. VAERS is a passive reporting system, which means that it relies on people to send in information about their experiences. VAERS accepts reports from anybody, including parents and patients.

TABLE 6
Number of Health Workers in the Family and Covid-19 Vaccine Refusal

Variables	Pearson Correlation (r)	Remark	p-value	Interpretation
* Number of health workers in the family and covid-19 vaccine refusal	-0.018	Negligible	.801	Not Significant

n = 30

Correlation Size: ±.00 - ±.30= Negligible; ±.31 - ±.50= Low; ±.51 - ±.70= Moderate; ±.71 - ±.90= High; ±.91 - ±1.0= Very High

The table shows the test of relationship between the number of health workers in the family and covid-19 vaccine refusal. As reflected in the table, the test yielded to a Pearson Correlation (r) coefficient of -0.018 with p value of .801 which signified not to reject the null hypothesis and established no significant relationship between the variables at 0.05 level. Furthermore, the r value of -0.018 also signified negligible negative correlation between the said variables. This means that the increase of the number of health workers in the family was related to the decrease of covid-19 vaccine refusal, and the decrease of the number of health workers in the family was related to the increase of covid-19 vaccine refusal. Therefore, it can be concluded from the results that there was no significant relationship between the number of health workers in the family and covid-19 vaccine refusal.

Healthcare workers (HCWs) will be critical to the success of COVID-19 vaccination among the general public. HCWs' recommendations play a major role in patients' vaccination decisions because they serve as a trusted source of vaccination information. There was a case where an HCW was given the COVID-19 vaccine but later died. It becomes their justification for rejecting the vaccine. According to The Hindu (2021), a 55-year-old female Health Care Worker (HCW) died on Saturday night after complaining of shortness of breath and giddiness after receiving COVID-19 vaccine in Macherial on January 19, 2021 (Tuesday). The reason of death, according to the State's Director of Public Health G. Srinivasa Rao, is definitely symptomatic of underlying morbidities and not attributable to COVID immunization. On the other hand, healthcare professionals' reluctance to be vaccinated may have contributed to fears – when a trusted doctor or nurse refuses to get the vaccine, people may be hesitant to get it themselves (Joi, 2021).

4. CONCLUSION

Based on the results of the study, such conclusions were drawn: students were willing to receive vaccination against COVID-19 and indicated that the students have good knowledge and awareness about the COVID19 vaccine. Such findings are of public health importance and should guide public health efforts in increasing acceptance of vaccination against COVID 19 in the population at large. Although an effective and safe vaccine against COVID 19 is a key element in controlling and bringing an end to the COVID 19 pandemic, ensuring wide acceptability of the vaccine is essential. Several barriers were identified and efforts should be intensified to overcome factors that hamper vaccination.

5. RECOMMENDATIONS

Based on the conclusion drawn from the study, the researchers feel the need of urgent public health strategies to address the wide misinformation and conspiracy theories surrounding COVID 19 vaccine. Moreover, transparent communication about vaccine effectiveness and safety will contribute to increasing public trust about COVID 19 vaccination programs. Remember that public trust in COVID19 vaccination is essential as the effectiveness of the vaccines themselves.

ACKNOWLEDGEMENTS

REFERENCES

Alqudeimat, Y., Alenezi, D., AlHajri, B., Alfouzan, H., Almokhaizeem, Z., Altamimi, S., Almansouri, W., Alzalzalah, S., & Ziyab, A.H. (2021). *Acceptance of a COVID-19 Vaccine and Its Related Determinants among the General Adult Population in Kuwait.* https://doi.org/10.1159/000514636

Arcadio, C. & Leidy, G. (2021). Hesitation and Refusal Factors in Individuals' Decision- Making Processes Regarding a Coronavirus Disease 2019 Vaccination. Retrieved fromhttps://www.frontiersin.org/articles/10.3389/fpubh.2021.626852/full

Bellon, M. (2021). *Gender differences in Covid-19 vaccine hesitancy.* Retrieved from https://gender.stanford.edu/news- publications/gender-news/gender-differences-covid-19-vaccine-hesitancy

Harrison, E. & Wu, J. (2020). *Vaccine confidence in the time of COVID-19.* Retrieved from https://link.springer.com/article/10.1007/s10654-020-00634-3

Henderson J, Ward PR, Tonkin E, Meyer SB, Pillen H, McCullum D, et al. (2021). *Developing and maintaining public trust during and post-COVID-19: can we apply a model developed for responding to food scares?*. Retrieved from https://www.frontiersin.org/articles/10.3389/fpubh.2021.626852/full#B8

Joi, P. (2021). *When refusing a COVID-19 vaccine isn't about hesitancy.* Retrieved from https://www.gavi.org/vaccineswork/when-refusing-covid-19-vaccine-isnt-about-hesitancy

Jones CL, Jensen JD, Scherr CL, Brown NR, Christy K, Weaver J. (2021). *The health belief model as an explanatory framework in communication research: exploring parallel, serial, and moderated mediation.* Retrieved from https://www.frontiersin.org/articles/10.3389/fpubh.2021.626852/full

Ley, J. (2021). *17-year-old female from Washington died of cardiac arrest 36 days after receiving her second Pfizer immunization.* Retrieved from https://www.clarkcountytoday.com/news/seventeen-year-old-

washington-female-dies-from-heart-attack-weeks-after-receiving-second-pfizer-vaccination/

Mcdonald, N. (2015). *Vaccine hesitancy: Definition, scope and determinants*. Retrieved from https://www.sciencedirect.com/science/article/pii/S0264410X15005009

Mendoza, R., Ong, M., Alfonso, C., & Dayrit, M. (2021). *From Dengvaxia to Sinovac: Vaccine Hesitancy in the Philippines.* Retrieved from https://thediplomat.com/2021/03/from-dengvaxia-to-sinovac-vaccine-hesitancy-in-the-philippines/

Nalzaro, B. (2021). *Nalzaro: Don't be choosy about COVID-19 vaccine.* Retrieved from https://ph.news.yahoo.com/nalzaro-don-t-choosy-covid-093100074.html

Rief, W. (2021). *Fear of Adverse Effects and COVID-19 Vaccine Hesitancy: Recommendations of the Treatment Expectation Expert Group*. JAMA Health Forum. 2021;2(4):e210804. doi:10.1001/jamahealthforum.2021.0804

Shimuz, K., Wharton, G., Sakamoto, H., MossiLOA, E. (2020). *Resurgence of covid-19 in Japan.* Retrived from https://www.bmj.com/content/370/bmj.m3221

The Hindu. (2021). *Vaccinated health worker dies in Telangana.* Retrieved from https://www.thehindu.com/news/national/telangana/vaccinated-woman-health-care-worker-dead/article33711191.ece

Westerman, A. (2021). *Filipinos hesitant about getting COVID jab after dengue fever vaccine debacle.* Retrieved from https://theworld.org/stories/2021-05-19/filipinos-hesitant-about-getting-covid-jab-after-dengue-fever-vaccine-debacle

World Health Organization [WHO]. (2021). *Coronavirus disease (COVID-19).* Retrieved from https://www.who.int/health-topics/cornavirus#tab_1